RDS/RBDS thoughts

Ideas for things to cover

- Sidechain vs. Inline
  - Benefits of each
  - How to decide…
- Integral or Third Party
  - Will my box do the job already, or do I need more?
- Do an Audit
  - Can't fix it if we don't know what's wrong
- What are the fields
  - What is optional?
  - Is there anything that MUST be included?
- The Gotchas
  - Moving the data
  - Port numbers
  - Refresh rate

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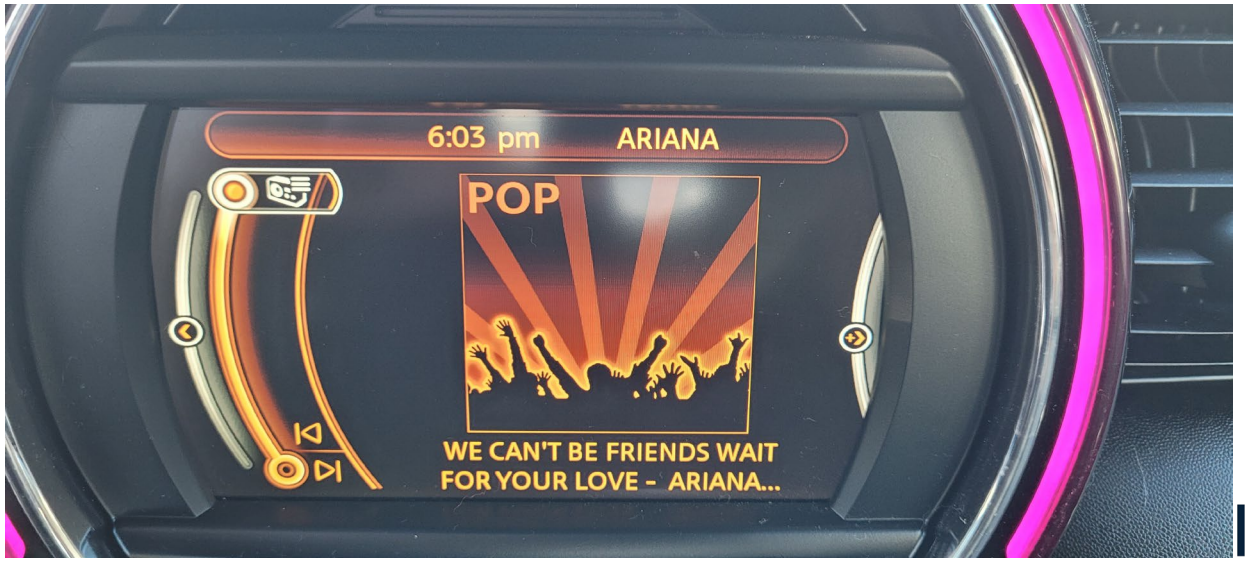
First, do an audit

Multiple vehicles, look at various stations, compare presence



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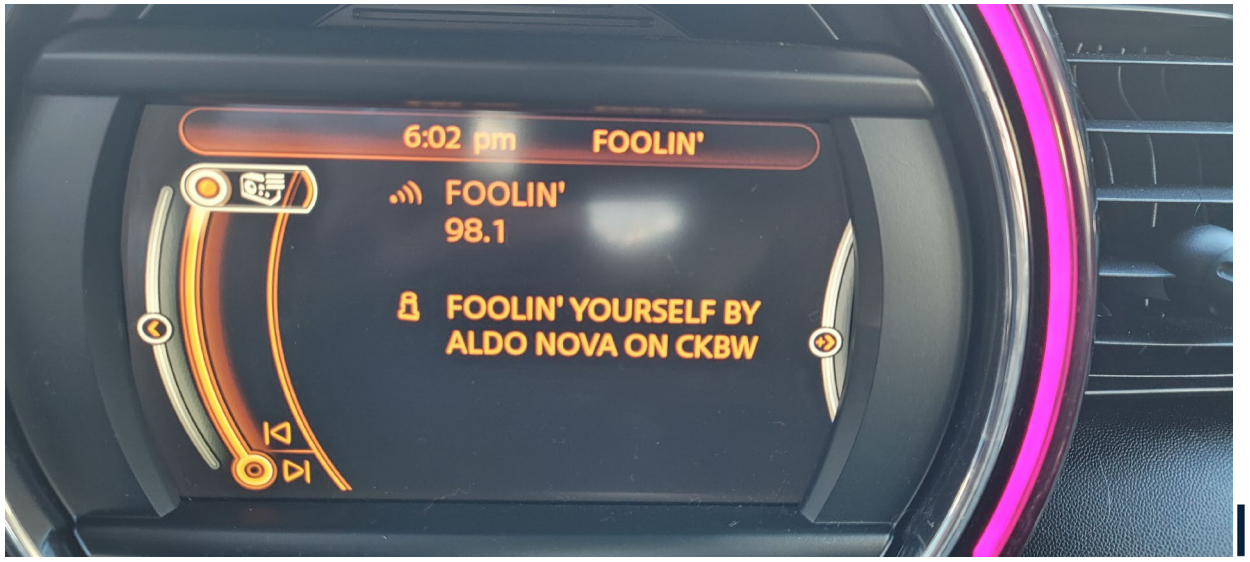
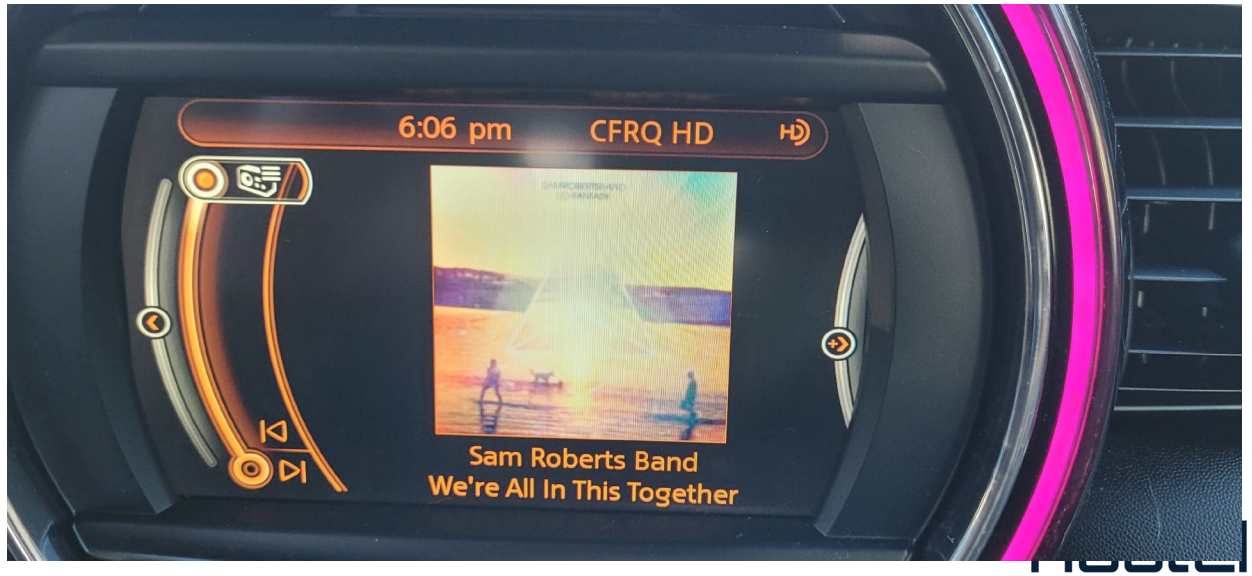
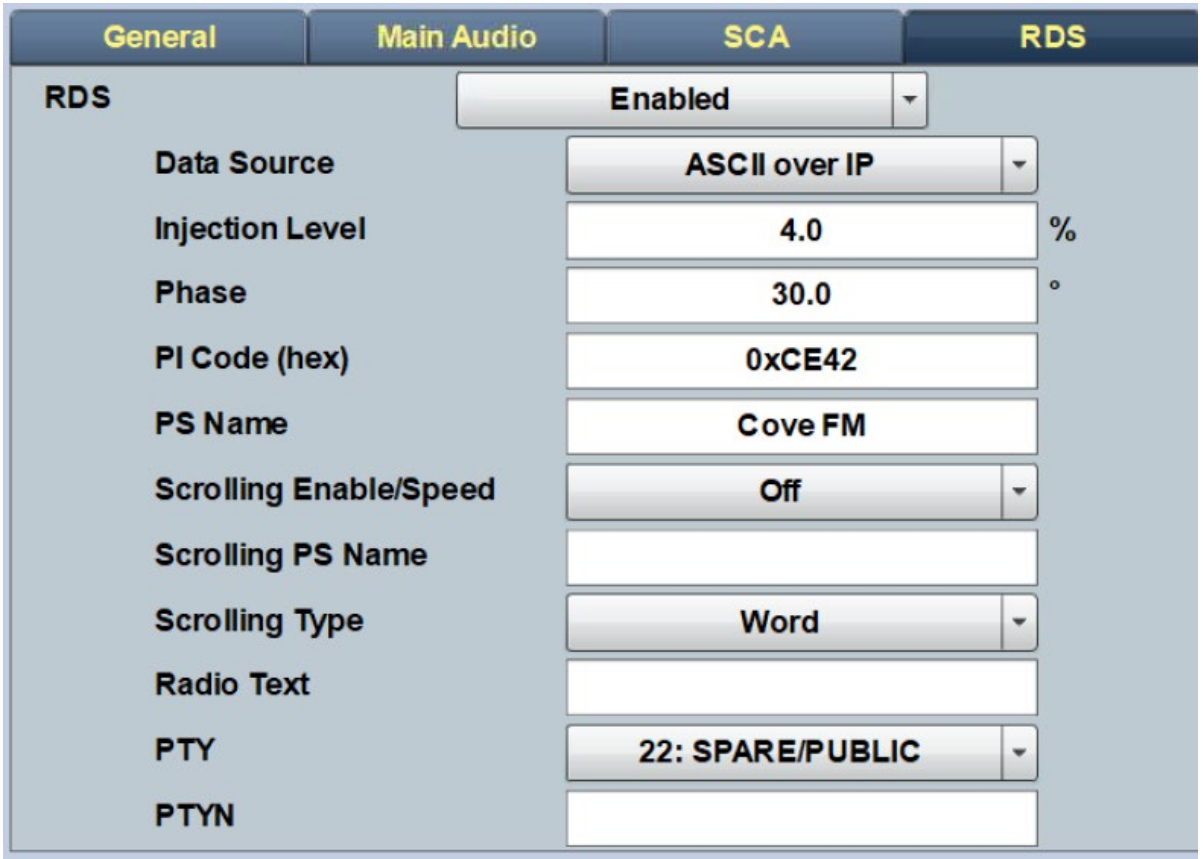
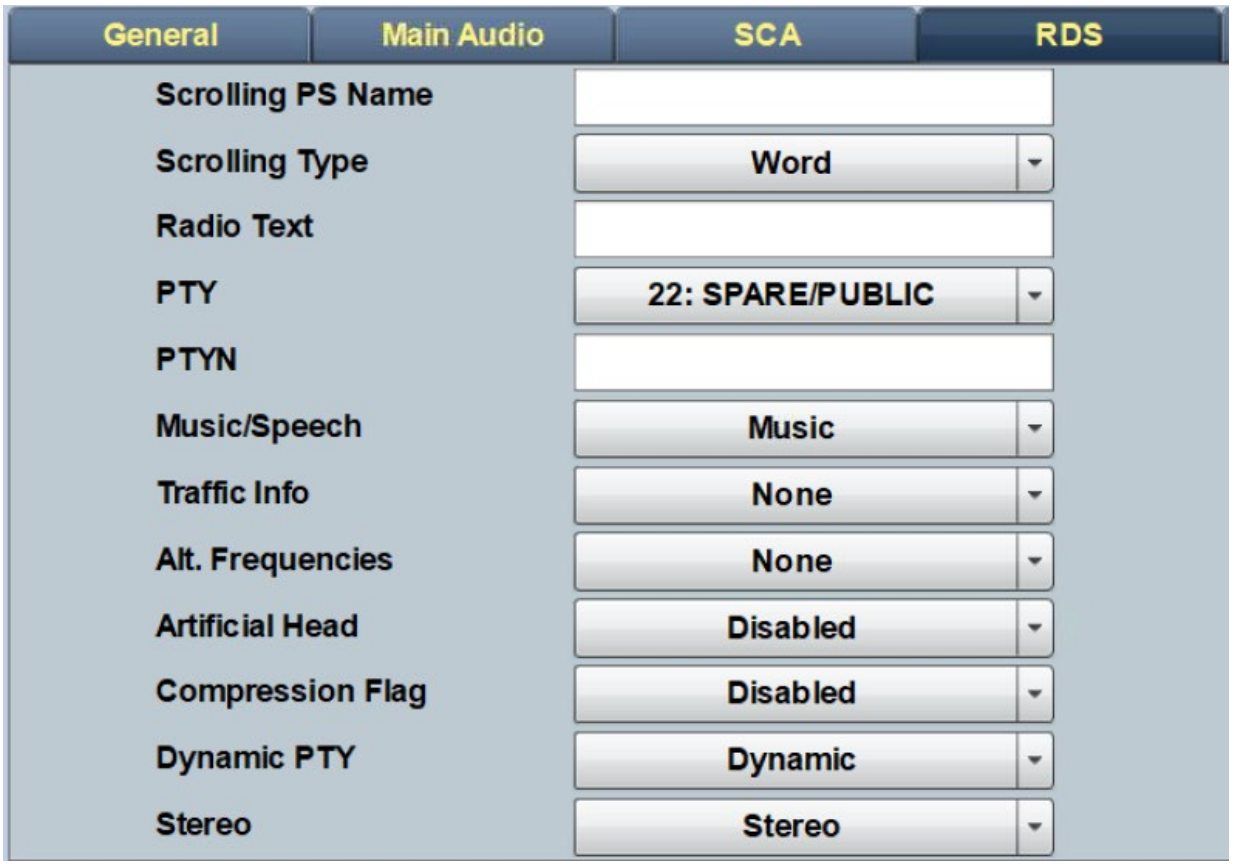


First, do an audit

Take your time – as data transmits, displays can change




General
Main Audio
SCA
RDS
RDS
Enabled
Data Source
ASCII over IP
Injection Level
4.0
%
Phase
30.0
°
PI Code (hex)
0xCE42
PS Name
Cove FM
Scrolling Enable/Speed
Off
Scrolling PS Name
Scrolling Type
Word
Radio Text
PTY
22: SPARE/PUBLIC
PTYN


General
Main Audio
SCA
RDS
Scrolling PS Name
Scrolling Type
Word
Radio Text
PTY
22: SPARE/PUBLIC
PTYN
Music/Speech
Music
Traffic Info
None
Alt. Frequencies
None
Artificial Head
Disabled
Compression Flag
Disabled
Dynamic PTY
Dynamic
Stereo
Stereo

Gp #	Description of Use	Gp #	Description of Use
0A	Basic tuning and switching information	8A	Traffic Message Channel or ODA
0B	Basic tuning and switching information	8B	Open Data Applications
1A	Program Item Number and slow labeling codes	9A	Emergency Warning System or ODA
1B	Program Item Number	9B	Open Data Applications
2A	Radiotext only	10A	Program Type Name
2B	Radiotext only	10B	Open Data Applications
3A	Applications Identification for ODA	11A	Open Data Applications
3B	Open Data Applications	11B	Open Data Applications
4A	Clock-time and date	12A	Open Data Applications
4B	Open Data Applications	12B	Open Data Applications
5A	Transparent Data Channels or ODA	13A	Enhanced Radio Paging or ODA
5B	Transparent Data Channels or ODA	13B	Open Data Applications
6A	In House applications or ODA	14A	Enhanced Other Networks data
6B	In House applications or ODA	14B	Enhanced Other Networks data
7A	Radio Paging or ODA	15A	Undefined
7B	Open Data Applications	15B	Fast switching information only

It is not required that broadcasters air all of the various RDS data groups. In fact, through most of the world the only group that the authorities would ever require would be the 0A group, which contains identification information about the station.

In normal operation, the A groups contain the data, and the B groups are generally used for error correction.

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Audemat RDS Encoder| Front panel

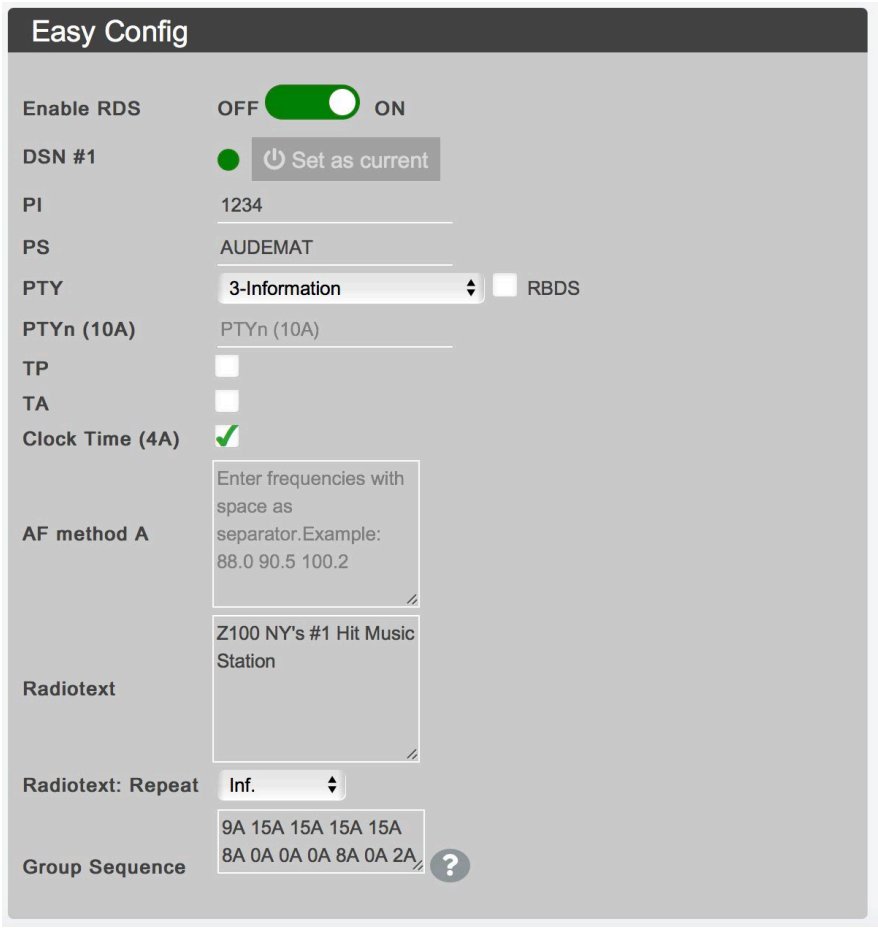
User-friendly front panel

Audemat RDS Encoder| Back panel

Multiple IO's back panel

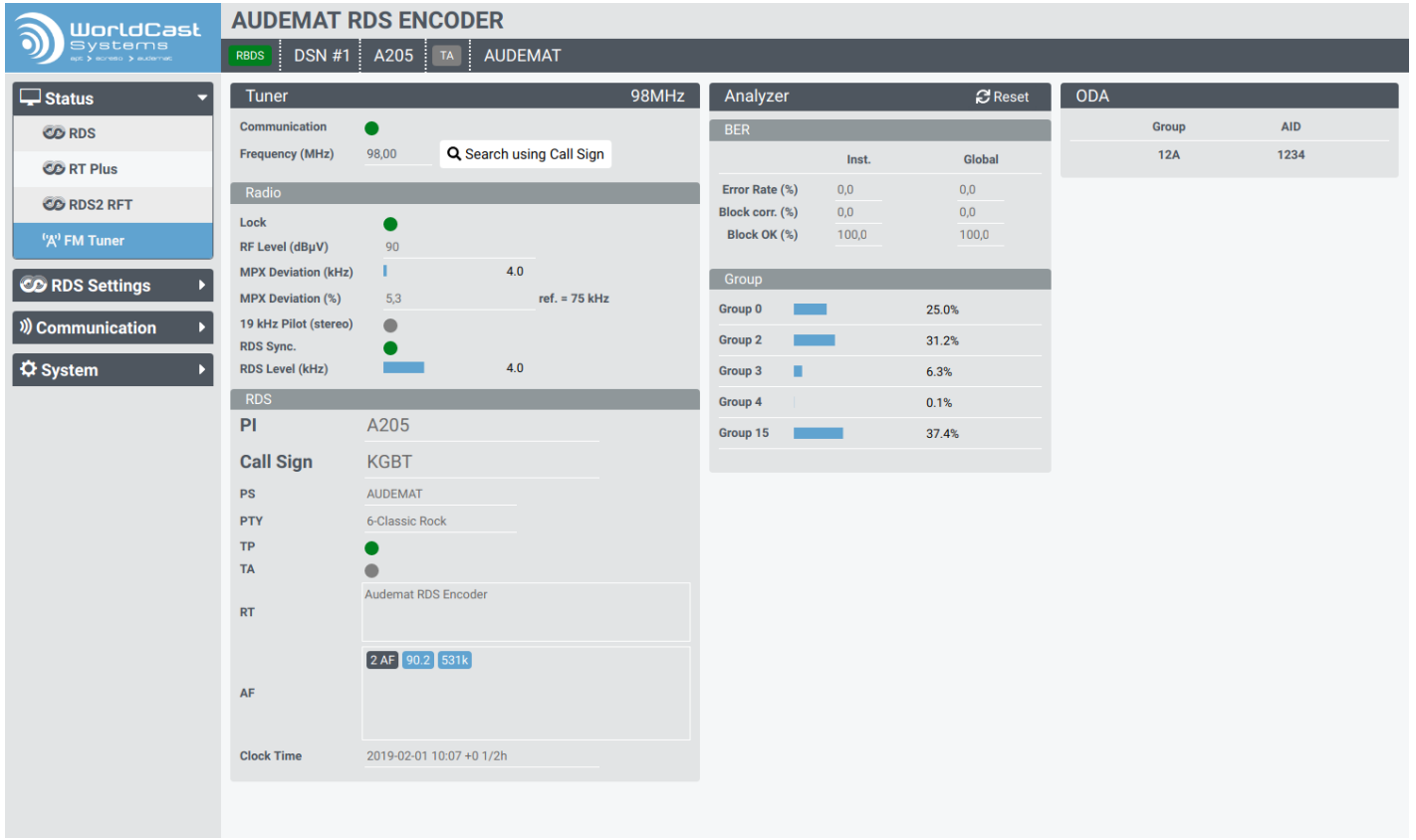
Easy configuration | Set it up in less than 30 seconds

- Configure the most used RDS features such as :
  - PI
  - PS
  - PTY
  - TP
  - TA
  - Radiotext
  - Group sequence
  - AF List



New features | FM Tuner

- Confident FM tuner built **into the box !**
  - **Automatic tuning** on the PI/Call Letters
  - Realtime RDS **decoding**
  - Group **analyzer**



- Standard for US market
- Option for RoW

RDS: Gotchas

- Software version
- Putting the right info, in the right places
- Active Preset
- Port 7005 & network
- Front end set-up

Software: Can I do that?

Transmitter	Software Version	Static/Dynamic
VS	4.2.5*	Yes/Yes*
NVLT	4.3.5	Yes/Yes
GV	4.3.3	Yes/Yes
NV	4.2.8	Yes/No

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RDS Configuration

Injection Level: 0-10%, typically 5%

- If 0%, no RDS ☺

PI (Programme Identification) Code: 4 digit hex

- Format 0x_ _ _ _ ex. WNUG = 0x790A

PS (Programme Service): Static station identification max 8 characters

- Hint – a space is a character ex. NUG 2016

Scrolling PS Name (if enabled): up to 64 characters

Scrolling Type: Word or Character

Radio Text: 1 – 64 characters that will display on some receivers.

- Not to be confused with Scrolling PS Name

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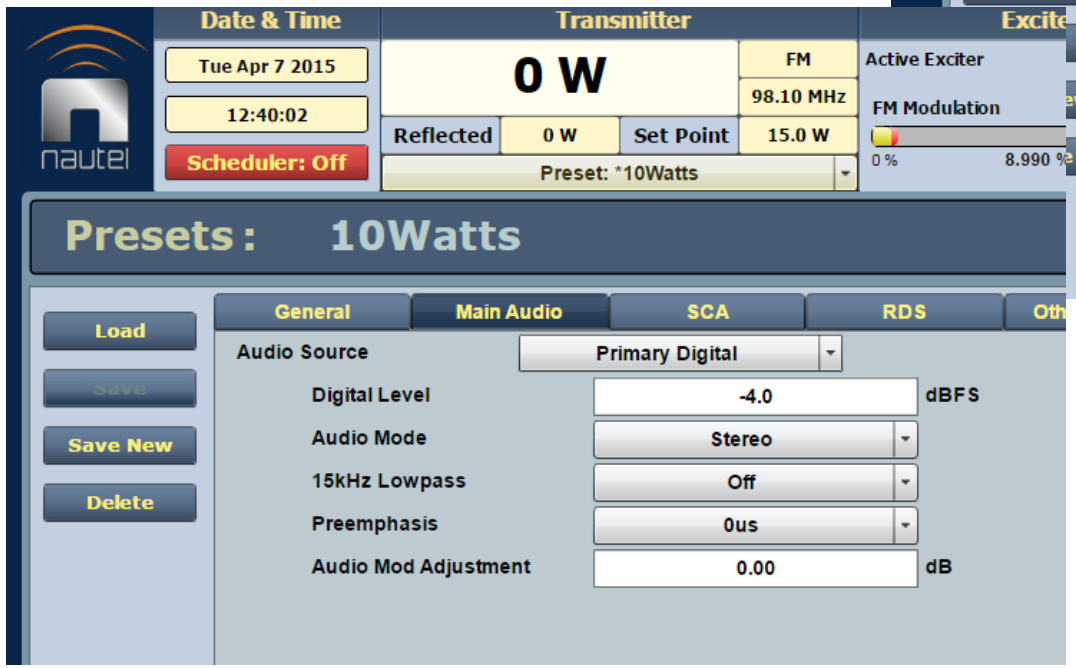
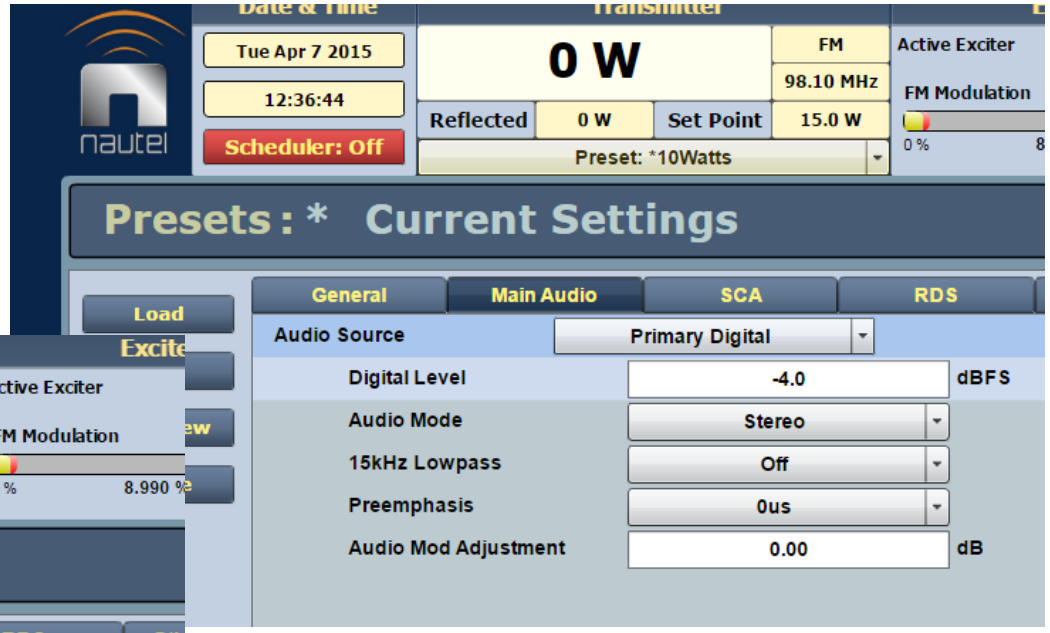
AUI: Preset VS Current Settings

Current Settings

- See the * notation
- Changes take effect immediately





Preset

- Changes the main preset
- Must activate changed preset for changes to go on-air

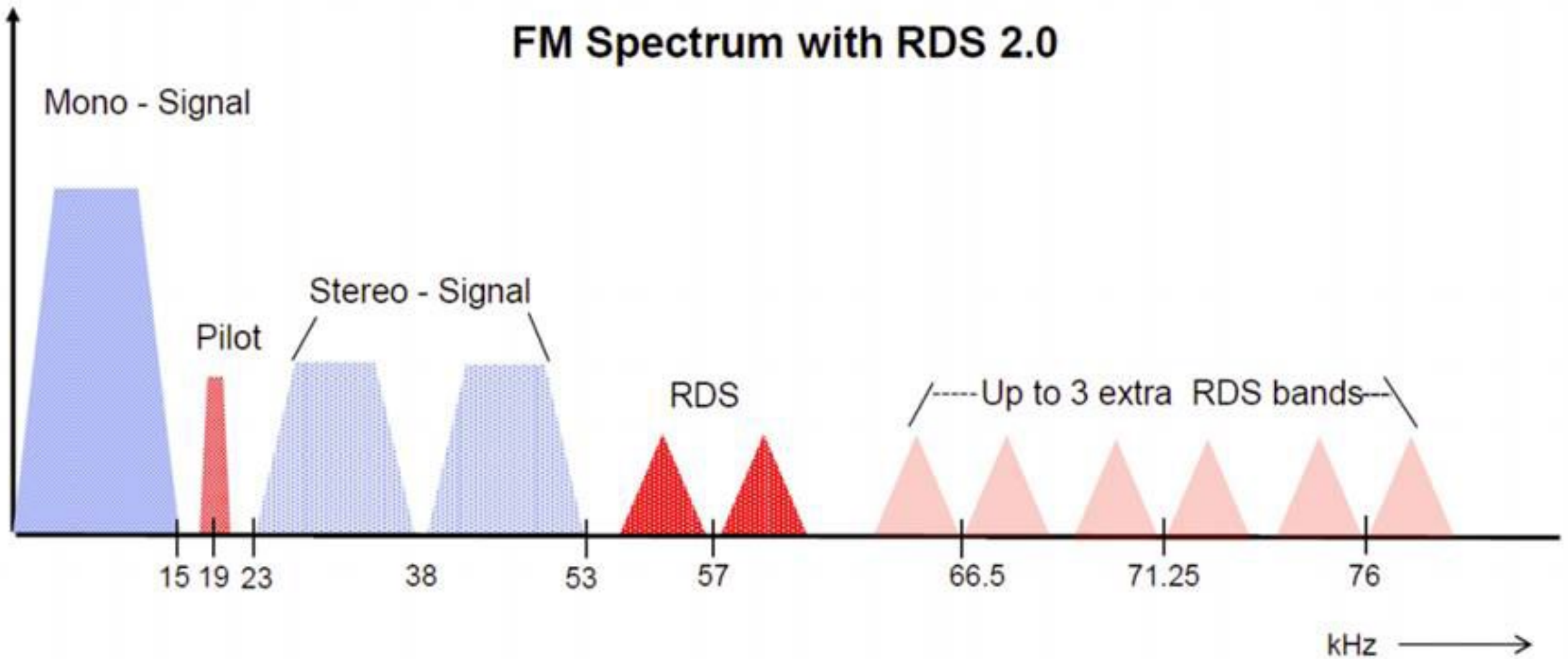
Port 7005 & Front End Set Up

ASCII over IP, open port 7005

- Is it open? Use port checker
- Hung up in your network? Is it the transmitter or is the signal stuck somewhere? Port Peeker can help here.

Front End Set Up

- Proper configuration
- How often are you sending information to the transmitter?


FM Spectrum with RDS 2.0
Mono - Signal
Pilot
Stereo - Signal
RDS
Up to 3 extra RDS bands
15
19
23
38
53
57
66.5
71.25
76
kHz

Resources:

- https://www.nautel.com/content/user_files/2018/03/Nautel-RW-ebook-RDS-Basics-and-Best-Practices-2018.pdf – RDS basics ebook
- https://picodes.nrscstandards.org/ - U.S. PI code calculator, links for stations and translators
  https://caseymediallc.com/rdsreverse - will also do Canadian PI codes (full service stations only)
- https://studylib.net/doc/18372295/rds-basics - more data on the data!
- http://ftp.audemat.com/ftp/ftp_inc/RDS_PRIMER .pdf - Audemat's "The RDS Primer"
- https://www.nrscstandards.org/standards-and-guidelines/documents/guidelines/g300-c.pdf - the NRSC Usage Guideline

Online Information

Webinars
https://www.nautel.com/resources/webinars/

Nautel Waves Newsletter
https://www.nautel.com/newsletters/

YouTube
http://www.youtube.com/user/NautelLtd

Online Info, such as the Broadcasters' Desktop Resource
https://www.thebdr.net/

THANK YOU!

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AM/FM Radio Transmitters